undersigned attorney at 508-339-3684 concerning such questions so that prosecution of this application may be expedited.

Respectfully submitted,

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Marked-up Claims 1-2, 6-8, 10, 13-15, 18-30, 33-35, 41-48, 50-51, 54-56, 62-69, 71, 74-76, 82-89, 94-99 and 101-105.

1. (Amended) A recombinant or isolated integrin subunit α11 [comprising essentially] having the amino acid sequence shown in SEQ ID No. 1, and homologues and fragments thereof.

2. (Amended) A process of producing a recombinant integrin subunit α11 [comprising essentially] having the amino acid sequence shown in SEQ ID No. 1, and homologues and fragments thereof, which process comprises the steps of

a) isolating a polynucleotide comprising a nucleotide sequence coding for a integrin subunit α11, of for homologues and fragments thereof,

b) constructing an expression vector comprising the isolated polynucleotide,

c) transforming a host cell with said expression vector,

d) culturing said transformed host cell in a culture medium under conditions suitable for expression of said integrin subunit α11, of said homologues and fragments, in said transformed host cell, and, optionally,

e) isolating the integrin subunit α11, or homologues and fragments thereof, from said transformed host cell or said culture medium.

6. (Amended) An isolated polynucleotide or oligonucleotide comprising a nucleotide coding for an integrin subunit α11, or for homologues or fragments thereof, which polynucleotide or oligonucleotide [comprises essentially] having the nucleotide sequence shown in SEQ ID No. 1 or suitable parts thereof.

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7. (Amended) An isolated polynucleotide or oligonucleotide which hybridises to a polynucleotide or oligonucleotide as defined in claim 6 [4], whereby said isolated polynucleotide or oligonucleotide fails to hybridise to a polynucleotide or oligonucleotide encoding an integrin subunit α10.

8. (Amended) A vector comprising a polynucleotide or oligonucleotide as defined in claim 6 [or 7].

10. (Amended) A cell, as generated by the process in steps a) to c) of claim 2, in which a polynucleotide or oligonucleotide coding for an integrin subunit α11, or for homologues and fragments thereof, [said polynucleotide or oligonucleotide comprising essentially the nucleotide sequence shown in SEQ ID No. 1 or parts thereof,] has been stably integrated in the cell genome, said polynucleotide or oligonucleotide having the nucleotide sequence shown in SEQ ID No. 1 or fragments thereof.

13. (Amended) A recombinant or isolated integrin heterodimer comprising a subunit α11 and a subunit β, [in which] the subunit α11 [comprises essentially] having the amino acid sequence shown in SEQ ID No. 1 or homologues or fragments thereof.

14. (Amended) A recombinant or isolated integrin heterodimer according to claim [11] 13, wherein the subunit β is β1.

15. (Amended) A process of producing a recombinant integrin heterodimer comprising a subunit α11 and a subunit β, [in which] the subunit α11 [comprises

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essentially] having the amino acid sequence shown in SEQ ID No. 1, or homologues or fragments thereof, which process comprises the steps of

a) isolating one polynucleotide or oligonucleotide comprising a nucleotide sequence coding for said subunit α11 of said integrin heterodimer, or for said homologues or fragments thereof, and, optionally, another polynucleotide comprising a nucleotide sequence coding for said subunit β of an integrin heterodimer, or for homologues or fragments thereof,

b) constructing an expression vector comprising said isolated polynucleotides or oligonucleotides

c) transforming a host cell with said expression vector or vectors,

d) culturing said transformed host cell in a culture medium under conditions suitable for expression of said integrin heterodimer, or said homologues or fragments thereof, in said transformed host cell, and, optionally,

e) isolating said integrin heterodimer, or said homologues or fragments thereof, from said transformed host cell or said culture medium.

18. (Amended) A process of providing an integrin heterodimer comprising a subunit α11 and a subunit β, as defined in claim [13 or] 14, or homologues or fragments thereof, whereby said integrin heterodimer is isolated from a cell in which it is naturally present.

19. (Amended) A cell containing

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i) a first vector, said first vector comprising a polynucleotide or oligonucleotide coding a subunit α11 of an integrin heterodimer, or for homologues or fragments thereof, which polynucleotide or oligonucleotide [comprises essentially] has the nucleotide sequence shown in SEQ ID No. 1 or parts thereof, and

ii) a second vector, said second vector comprising a polynucleotide or oligonucleotide coding for a subunit of said integrin heterodimer.

20. (Amended) Binding sites of an integrin heterodimer as defined in claim [13 or] 14, or of homologues or fragments thereof, said binding sites having the capability of binding specifically to entities chosen among the group comprising proteins, peptides, carbohydrates, lipids, natural integrin binding ligands, polyclonal and monoclonal antibodies, and fragments thereof.

21. (Amended) Binding entities having the capability of binding specifically to an integrin heterodimer as defined in claim [13 or] 14, or to homologues or fragments thereof, said binding entities being chosen among the group comprising proteins, peptides, carbohydrates, lipids, .natural integrin binding ligands, polyclonal and monoclonal antibodies, and fragments thereof.

22. (Amended) A fragment of an integrin subunit α11, which integrin subunit α11 [comprises essentially] has the amino acid sequence shown in SEQ ID No: 1, said fragment being a peptide chosen from the group comprising peptides of the cytoplasmic domain, the I-domain and the extracellular extension region.

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23. (Amended) A fragment according to claim 22, said fragment being a peptide from the cytoplasmic domain [comprising essentially] having the amino acid sequence

KLGFFRSARRRREPGLDPTPKVLE.

24. (Amended) A fragment according to claim 22, which is a peptide [comprising essentially] having the amino acid sequence of the extracellular domain, from about amino acid No. 804 to about amino acid no. 826 of SEQ ID No. 1.

25. (Amended) A fragment according to claim 22, which is a peptide [comprising essentially] having the amino acid sequence of the I-domain, from about amino acid No. 159 to about amino acid no. 355 of SEQ ID No. 1.

26. (Amended) A method of producing a fragment of the integrin subunit α11 as defined in [any one of claims 22-25] claim 22, which method comprises a sequential addition of amino acids.

27. (Amended) A polynucleotide or oligonucleotide coding for a fragment of the integrin subunit α11 as defined in [any one of claims 22-25] claim 22.

28. (Amended) Binding sites of an integrin subunit α11 fragment as defined in [any one of claims 22-25] claim 22, said binding sites having the capability of binding specifically to entities chosen from the group comprising proteins, peptides, carbohydrates, lipids, natural integrin binding ligands, monoclonal and polyclonal antibodies, and fragments thereof.

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29. (Amended) Binding entities having the capability of binding specifically to an integrin subunit α11 fragment as defined in [any one of claims 22-25] claim 22, which binding entities are chosen from the group comprising proteins, peptides, carbohydrates, lipids, natural integrin binding ligands, monoclonal and polyclonal antibodies, and fragments thereof.

30. (Amended) A process of using an integrin subunit α11 [comprising essentially] having the amino acid sequence shown in SEQ ID No.1 or an integrin heterodimer comprising said subunit α11 and a subunit β, or homologues or fragments thereof, as a marker or target molecule of cells or tissues expressing said integrin subunit α11, which cells or tissues are of animal [including human] origin, comprising

introducing an integrin subunit α11 according to claim 1, or an integrin heterodimer comprising said subunit α11 and a subunit β into a cell or tissue of animal origin, and

allowing said subunit or heterodimer to bind to a target molecule of cells or tissues expressing said integrin subunit α11.

33. (Amended) A process according to claim 31, which pathological conditions are [comprised within] selected from the group [comprising] consisting of damage of muscles, muscle dystrophy, fibrosis and wound healing.

34. (Amended) A process according to claim 31, which pathological conditions are [comprised within] selected from the group [comprising] consisting of damage of cartilage and/or bone, and cartilage and/or bone diseases.

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35. (Amended) A process according to claim 31, which pathological conditions are [comprised within] selected from the group [comprising] consisting of trauma, rheumatoid arthritis, osteoarthritis and osteoporosis.

41. (Amended) A process according to claim 30 [any one of claims 30-40], which is an *in vitro* process.

42. (Amended) A process according to claim 30 [any one of claims 30-40], which is an *in situ* process.

43. (Amended) A process according to claim 30 [any one of claims 30-40], which is an *in vivo* process.

44. (Amended) A process according to claim 30 [any one of claims 30-43], whereby a fragment of said integrin subunit $\alpha 11$ is a peptide chosen from the group comprising peptides of the cytoplasmic domain, the I-domain and the extracellular extension region.

45. (Amended) A process according to claim 44, whereby said fragment is a peptide [comprising essentially] having the amino acid sequence KLGFFRSARRRREPGLDPTPKVLE from the cytoplasmic domain.

46. (Amended) A process according to claim 44, whereby said fragment is a peptide [comprising essentially] having the amino acid sequence of the extracellular domain, from about amino acid No. 804 to about amino acid no. 826 of SEQ ID No. 1.

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47. (Amended) A process according to claim 44, whereby said fragment is a peptide [comprising essentially] having the amino acid sequence of the I-domain, from about amino acid No. 159 to about amino acid no. 355 of SEQ ID No. 1.

48. (Amended) A process according to claim 30 [any one of claims 30-47], whereby a subunit β of the integrin heterodimer is β1.

50. (Amended) A process of using binding entities having the capability of binding specifically to binding sites of an integrin subunit α11 [comprising essentially] having the amino acid sequence shown in SEQ ID No. 1, or an integrin heterodimer comprising said subunit α11 and a subunit β, or to homologues or fragments thereof, as markers or target molecules of cells or tissues expressing said integrin subunit α11, which cells or tissues are of animal [including human] origin.

51. (Amended) A process according to claim 50, which is a process for detecting the presence of an integrin subunit α11 [comprising essentially] having the amino acid sequence shown in SEQ ID No. 1, or of an integrin heterodimer comprising said subunit α11 and a subunit β, or of homologues or fragments thereof.

54. (Amended) A process according to claim 52, which pathological conditions are [comprised within the group comprising] selected from the group consisting of damage of muscles, muscle dystrophy, fibrosis and wound healing.

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Marked-up Claims 1-2, 6-8, 10, 13-15, 18-30, 33-35, 41-48, 50-51, 54-56, 62-69, 71, 74-76, 82-89, 94-99 and 101-105.

55. (Amended) A process according to claim 52, which pathological conditions are [comprised within the group comprising] selected from the group consisting of damage of cartilage and/or bone, and cartilage and/or bone diseases.

56. (Amended) A process according to claim 52, which pathological conditions are selected from [comprised within] the group consisting of [comprising] trauma, rheumatoid arthritis, osteoarthritis and osteoporosis.

62. (Amended) A process according to claim 50 [any one of claims 50-61], which is an *in vitro* process.

63. (Amended) A process according to claim 50 [any one of claims 50-61], which is an *in situ* process.

64. (Amended) A process according to claim 50 [any one of claims 50-61], which is an *in vivo* process.

65. (Amended) A process according to claim 50 [any one of claims 50-61], whereby a fragment of said integrin subunit α11 is a peptide chosen from the group comprising peptides of the cytoplasmic domain, the I-domain and the extracellular extension region.

66. (Amended) A process according to claim 65, whereby said fragment is a peptide [comprising essentially] having the amino acid sequence KLGFFRSKRRRREPGLDPTPKVLE from the cytoplasmic domain.

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67. (Amended) A process according to claim 65, whereby said fragment is a peptide [comprising essentially] having the amino acid sequence of the extracellular domain, from about amino acid No. 804 to about amino acid no. 826 of SEQ ID No. 1.

68. (Amended) A process according to claim 65, whereby said fragment is a peptide [comprising essentially] having the amino acid sequence of the I-domain, from about amino acid No. 159 to about amino acid no. 355 of SEQ ID No. 1.

69. (Amended) A process according to claim 50 [any one of claims 50-68], whereby a subunit β of the integrin heterodimer is β1.

71. (Amended) A process for detecting the presence of an integrin subunit α11, or of homologues or fragments of said integrin subunit, on cells, whereby a polynucleotide or oligonucleotide chosen from the group comprising a polynucleotide or oligonucleotide having [essentially] the nucleotide sequence as shown in SEQ ID No. 1, or homologues or fragments thereof, is used as a marker under [hybridisation] hybridization conditions, wherein said polynucleotide or oligonucleotide fails to [hybridise] hybridize to a polynucleotide or oligonucleotide encoding an integrin subunit α10.

74. (Amended) A process according to claim 72, which pathological conditions are selected from [comprised within] the group consisting of [comprising] damage of muscles, muscle dystrophy, fibrosis and wound healing.

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75. (Amended) A process according to claim 72, which pathological conditions are selected from [comprised within] the group consisting of [comprising] damage of cartilage and/or bone, and cartilage and/or bone diseases.

76. (Amended) A process according to claim 72, which pathological conditions are selected from [comprised within] the group consisting of [comprising] trauma, rheumatoid arthritis, osteoarthritis and osteoporosis.

82. (Amended) A process according to claim 71 [any one of claims 71-81], which is an *in vitro* process.

83. (Amended) A process according to claim 71 [any one of claims 71-81], which is an *in situ* process.

84. (Amended) A process according to claim 71 [any one of claims 71-81], which is an *in vivo* process.

85. (Amended) A process according to claim 71 [any one of claims 71-84], whereby said polynucleotide or oligonucleotide is a polynucleotide or oligonucleotide coding for a peptide chosen from the group consisting of [comprising] peptides of the cytoplasmic domain, the I-domain and the extracellular extension region.

86. (Amended) A process according to claim 85, whereby said peptide is a peptide [comprising essentially] having the amino acid sequence KLGFFRSARRRREPGLDPTPKVLE from the cytoplasmic domain.

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87. (Amended) A process according to claim 85, whereby said peptide is a peptide [comprising essentially] having the amino acid sequence of the extracellular domain, from about amino acid No. 804 to about amino acid no. 826 of SEQ ID No. 1.

88. (Amended) A process according to claim 85, whereby said peptide is a peptide [comprising essentially] having the amino acid sequence of the I-domain, from about amino acid No. 159 to about amino acid no. 355 of SEQ ID No. 1.

89. (Amended) A process according to claim 71 [any one of claims 71-88], whereby a subunit β of the integrin heterodimer is β1.

94. (Amended) A vaccine comprising as an active ingredient at least one member of the group [comprising] consisting of an integrin heterodimer, which heterodimer comprises a subunit α11 and a subunit β, or the subunit α11 thereof, and homologues [mologues] or fragments of said integrin or subunit α11, and a polynucleotide and a oligonucleotide coding for said integrin subunit α11.

95. (Amended) A method of gene therapy, whereby vector comprising a polynucleotide or oligonucleotide coding for a subunit α11 of an integrin heterodimer, or for homologues or fragments thereof, which polynucleotide or oligonucleotide [comprises essentially] has the nucleotide sequence shown in SEQ ID No: 1 or parts thereof, and optionally a second vector comprising a polynucleotide or oligonucleotide coding for a

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subunit β of said integrin heterodimer, is administered to a subject suffering from pathological conditions involving said subunit α11.

96. (Amended) A method of [using] promoting adhesion of cells comprising introducing to a cell sample binding entities having the capability of binding specifically to binding sites of a integrin subunit α11 comprising substantially the amino acid sequence shown in SEQ ID No. 1, or of an integrin heterodimer comprising said subunit α11 and a subunit β, or to homologues or fragments thereof [, for promoting adhesion of cells].

97. (Amended) A method of [using] targeting for antiadhesive drugs or molecules in tissues comprising adding to a tissue. an integrin heterodimer comprising an integrin subunit α11 and a subunit β, or the subunit α11 thereof, or homologues or fragments of said integrin or subunit α11, as a target for antiadhesive drugs or molecules in tissues where adhesion impairs the function of the tissue.

98. (Amended) A method of in vitro detecting the presence of integrin binding entities, comprising [interaction of] introducing an integrin heterodimer comprising a subunit α11 and a subunit β, or the subunit α11 thereof, or homologues or fragments of said integrin or subunit, [with] to a sample, thereby causing said integrin, subunit α11, or homologue or fragment thereof, to modulate the binding to its natural ligand or other integrin binding proteins present in said sample.

99. (Amended) A method of in vitro studying consequences of the interaction of a human heterodimer integrin comprising introducing a subunit α11 and a subunit β, or the

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subunit α11 thereof, or homologues or fragments of said integrin or subunit, with an integrin binding entity and thereby initiate a cellular reaction, and observing said cellulor reaction.

101. (Amended) A method of [using] targeting molecules comprising introducing a polynucleotide or oligonucleotide encoding an integrin subunit α11 or homologues or fragments thereof [as a target molecule].

102. (Amended) A method according to claim 101, comprising [hybridising] hybridizing a polynucleotide or oligonucleotide to the DNA or RNA encoding the integrin subunit α11 or homologue or fragment thereof, which polynucleotide or oligonucleotide fails to hybridise to a polynucleotide or oligonucleotide encoding an integrin subunit α10.

103. (Amended) A method of [using] promoting adhesion of chondrocytes and/or osteoblasts to surfaces of implants to stimulate osseointegration comprising introducing binding entities having the capability of binding specifically to an integrin subunit α11 comprising the amino acid sequence shown in SEQ ID No. 1 or SEQ ID No. 2, or an integrin heterodimer comprising said subunit α11 and a subunit β, or to homologues or fragments thereof having similar biological activity, [for promoting adhesion of chondrocytes and/or osteoblasts] to surfaces of implants [to] wherein said binding entities stimulate osseointegration.

104. (Amended) A method of [using] targeting for antiadhesive drugs or molecules in tendon, ligament, skeletal muscle or other tissues comprising

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introducing an integrin heterodimer comprising an integrin subunit α11 and a subunit β, or the subunit α11 thereof, or homologues or fragments of said integrin or subunit α11, and

monitoring for adhesion [as a target for antiadhesive drugs or molecules in tendon, ligament, skeletal muscle or other tissues where adhesion impairs the function of the tissue].

105. (Amended) A method of stimulating, inhibiting or blocking the formation of cartilage or bone, comprising administration to a subject a suitable amount of a pharmaceutical agent or an antibody which is capable of [using] targeting an integrin heterodimer comprising a subunit α11 and a subunit β, or the subunit α11 thereof, or homologues or fragments of said integrin or subunit α11 [, as a target molecule].

--ABSTRACT

A recombinant or isolated integrin heterodimer comprising a novel subunit α11 in association with a subunit β is described. The integrin or the subunit α11 can be used as marker or target of all types of cells. The integrin or subunit α11 thereof can be used as marker or target in different physiological or therapeutic methods. They can also be used as active ingredients in pharmaceutical compositions and vaccines.--